

Patent Abstracts of Japan

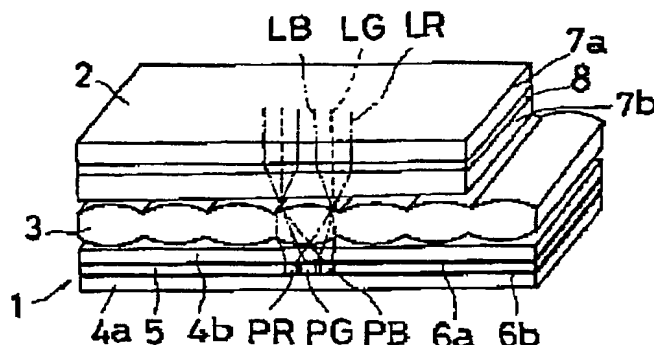
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 PATENTEE : SHIMADZU CORP
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TITLE : COLOR LIQUID CRYSTAL DISPLAY
 DEVICE



ABSTRACT : PURPOSE: To efficiently spectrally split light for irradiating liquid crystals to three primary color light beams and to enhance brightness without increasing a calorific value and electric power consumption by diffracting the light for irradiating liquid crystals to the directions meeting the arrangement of picture elements for displaying three primary colors image by a hologram element.

CONSTITUTION: The hologram element 2 is of a transmission volume type constituted by inserting a photosensitive material 8 between glass substrates 7a and 7b. The element is formed with a diffraction grating on this photosensitive material 8 and spectrally splits the light for irradiating liquid crystals to the red light LR, the green light LG and the blue light LB by diffracting the above-mentioned light. The diffraction direction of the light for irradiating liquid crystals by the hologram element 2 correspond to the arrangement of the picture elements PR, PG, PB of the liquid crystal display device 1. A condenser lens 3 is provided with unit lens parts facing the picture elements PG, PR, PB juxtaposed in an X direction continuously in a Y direction. The respective unit lens parts condense the green light LG, red light LR and blue light LB spectrally split by the hologram element 2 to the picture elements PG, PR, PB for display. As a result, the color images are displayed by irradiating the respective picture elements PG, PR, PB with the light for irradiating liquid crystals.